METHOD AND DISK DRIVE FOR IMPROVING HEAD POSITION ACCURACY DURING TRACK FOLLOWING THROUGH REAL-TIME IDENTIFICATION OF EXTERNAL VIBRATION AND MONITORING OF WRITE-UNSAFE OCCURRENCES

ABSTRACT

1   A method is disclosed for improving head position accuracy in a disk drive during track

2   following of concentric data storage tracks through real-time identification of external vibration

3   and monitoring of write-unsafe (WUS) occurrences. In the method, after a seek operation to a

4   predetermined data storage track, the track is followed using a servo control loop having a

5   nominal gain and responsive to a position error signal (PES). After waiting a vibration detection

6   delay period, occurrences of the PES exceeding a WUS limit are counted generating a WUS

7   limit exception count. Also, a property of a variance is determined from spectral power values

8   generated from the PES during track following. If the WUS limit exception count exceeds a first

9   threshold, and if the property of the variance exceeds a second threshold, the nominal gain is

10   increased to a vibration gain within a frequency band, to attenuate the effect of external

11   vibration.